

As seen in FIG. 9 a diagram showing the eight-stroke engine working cycles.

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4 CLAIMS

As will be apparent to those skilled in the art in the light of the foregoing disclosure, many alterations and modifications are possible in the practice of this invention without departing from the spirit or scope thereof. Accordingly, the scope of the invention is to be construed in accordance with the substance defined by the following claims.

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What is claimed is:

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1. An multi-cycle, reciprocating piston-type internal combustion engine comprising; at least one master cylinder which includes a reciprocating piston being connected to a crankshaft, and at least one slave cylinder which includes a reciprocating piston being connected to said crankshaft; and an overhead valve means for, admission of gases of air and fuel mixture to said master cylinder and admission of air only to said slave cylinder and discharge of exhaust gases from said slave cylinder; wherein the engine comprises at least two cylinders disposed to form a pair, one said master cylinder adjacent the other said slave cylinder, with a coordinate means, for coordinating gases between said master cylinder and adjacent said slave cylinder.

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2. An internal combustion engine of claim 1, where said coordinating means for coordinating exchange of gases between said master cylinder and said slave cylinder, is a coordinate valve means at said master cylinder side, where said valve means includes; a passage port means of sufficient size to permit gases therethrough between said slave cylinder and said master cylinder, and for channelling gases through said valve from said master cylinder to said slave cylinder.

3. An internal combustion engine according to claim 2, in which said coordinate  
2 valve means opens at approximately 420 degrees of cycle revolution, where the  
slave cylinder's compressed air can begin to flow into said master cylinder. When  
4 engine rotation is at approximately 450 degrees of cycle revolution, all said  
compressed air in said slave cylinder will come into said master cylinder.

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4. An internal combustion engine of claim 3, where said compressed air from  
8 said slave cylinder will combine with heat energy from said master cylinder in  
said slave cylinder to produce a second power cycle through said coordinate  
10 valve without addition of fuel.

12 5. An internal combustion engine according to claim 1, where said master  
cylinder and said slave cylinder are operating 60 degrees to 120 degrees apart,  
14 with said slave cylinder trailing said master cylinder.

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6. An internal combustion engine according to claim 1, wherein said two cylinders  
18 are disposed along a line, adjacent the crankshaft to which they are connected.

20 7. An internal combustion engine according to claim 1, wherein said two cylinders  
are disposed in a V cylinder configuration, adjacent the crankshaft to which they  
22 are connected.

24 8. An internal combustion engine according to claim 1, comprising a multiple of  
said master cylinder and said slave cylinder pairs.

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9. An internal combustion engine according to claim 2, wherein a second  
28 coordinating valve means is located overhead of said slave cylinder working with  
said coordinating valve means above said master cylinder.

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10. An internal combustion engine as claimed in claim 1, wherein said engine is  
2 an engine of a type of charged intake.

4 11. An eight-cycle, reciprocating piston-type internal combustion engine having;  
a basic unit comprising at least one four-cycle master cylinder and a piston, and  
6 at least one four-cycle slave cylinder and a piston, provided with means for  
introducing and firing a fuel-air mixture for said master cylinder, means for  
8 introducing air for said slave cylinder, including means for transferring expansion  
gases between said master cylinder and said slave cylinder and means for  
10 coordinating expansion gases between said master cylinder; and to produce a  
second power stroke from said slave cylinder, and including exhaust passage  
12 means from said slave cylinder to outside; and where said master cylinder and  
said slave cylinder are operating between 60 and 120 degrees apart with said  
14 slave cylinder trailing said master cylinder.

16 12. An internal combustion engine of claim 11, where said coordinating means  
for coordinating exchange of expansion gases between said master cylinder and  
18 said slave cylinder, is a coordinating valve means at said master cylinder side;  
where said coordinating valve means includes a passage port means between  
20 said master cylinder and said slave cylinder, for channelling expansion gases  
from said slave cylinder through said coordinating valve to said master cylinder,  
22 and said master cylinder expansion gases to said slave cylinder.

24 13. An internal combustion engine according to claim 12, in which said  
coordinate valve means opens at approximately 420 degrees of cycle revolution,  
26 where slave cylinder's compressed air can begin flow into said master cylinder.  
When engine rotation is at approximately 450 degrees of cycle revolution, all said  
28 compressed air in said slave cylinder will come into said master cylinder.

14. An internal combustion engine of claim 13, where said compressed air from  
2 said slave cylinder will combine with heat energy from said master cylinder in  
said slave cylinder to produce said second power cycle without addition of fuel.

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15. An internal combustion engine according to claim 11, where said master  
6 cylinder and said slave cylinder are operating 90 degrees apart, with said slave  
cylinder trailing said master cylinder.

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16. An internal combustion engine according to claim 11, wherein said master  
10 cylinder and said slave cylinder are disposed along a line, adjacent the  
crankshaft to which they are connected.

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17. An internal combustion engine according to claim 11, wherein said master  
14 cylinder and said slave cylinder are disposed in a V cylinder configuration,  
adjacent the crankshaft to which they are connected.

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18. An internal combustion engine according to claim 11, comprised of multiples  
18 pairs of said master cylinder and said slave cylinder.

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19. An internal combustion engine according to claim 12, wherein a second  
coordinating valve means is located overhead of said slave cylinder, working with  
22 said coordinating valve means above said master cylinder.

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20. An internal combustion engine as claimed in claim 11, wherein said engine is  
an engine of a type of charged intake.